

REMARKS

The following remarks are responsive to the Final Office Action mailed November 10, 2009 ("Action"). Reconsideration and allowance are respectfully requested based on the following remarks.

Specification Objection

This Action objects to the specification as failing to provide proper antecedent basis for the subject matter of claim 33. Applicants respectfully traverse. Claim 33 has been amended to recite a "memory storing computer program code." Support for this amendment may be found at least in paragraph 116 of the published application. *See* US 20070053281.

Claim Rejections Under 35 U.S.C. § 101

Claim 33 stands rejected under 35 U.S.C. § 101 because the claimed invention is directed to non-statutory subject matter. Applicants respectfully traverse. Claim 33 has been amended to recite a "memory storing computer program code," and Applicants submit that claim 33 is statutory under 35 U.S.C. § 101. Applicants respectfully request withdrawal of the objection.

Claim Rejections Under 35 U.S.C. § 103

Claims 1-8, 15-23, and 26-33 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Keevill et al. (US 6,359,938) in view of Hayashi et al. (US 2005/0174929).

Claims 24 and 25 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Keevill and Hayashi, in further view of Calderbank et al. (US 6,115,427).

Applicants respectfully traverse for at least the following reasons.

The combination of Keevill and Hayashi, even if proper, does not disclose or suggest "an accessor configured to access at least one symbol which is adapted to establish a distinguishable power based pattern for pilot carriers in the at least one symbol." On page 5, the Action concedes that:

Keevill is silent on the pilot carrier symbols having a distinguishable power based pattern.

To remedy this deficiency, the Action asserts:

However, Hayashi teaches a method and receiving device wherein the channel response calculation section (Hayashi: Section 22, Figure 15) contains a differential power calculator (237) that outputs a power corresponding to a change amount in the channel responses for pilot signals in one cycle or N symbols (Hayashi: [0205-0206]). Figure 2 is an interpretation of the pattern of symbols (P1 = pilot symbols), generating a matrix with horizontal axis to the frequency, and the vertical axis to the time (Hayashi: [0084-0085]).

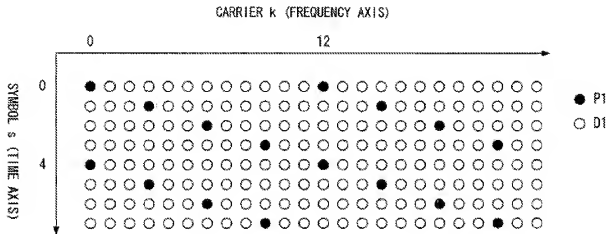
Id. To further support the rejection, in the response to arguments section, the Action asserts that:

Applicant specifically argues the reference Hayashi fails to disclose "an accessor configured to access at least one symbol which is adapted to establish a distinguishable power based pattern for pilot carriers in the at least one symbol". Examiner cited Hayashi, paragraphs [0206-0207] to describe the limitation. In the paragraphs, the differential power calculator takes into consideration differential power responses corresponding to a change amount in the responses for pilot signals in one cycle (at least one symbol). The embodiment averages the change amounts obtained for the pilot-inserted carriers and formulates fading information. Based on this information, the channel responses can be calculated to the degree of the fading (Hayashi: [0212]). Examiner has interpreted the above cited paragraphs to read on the "distinguishable power based pattern", as written in the claims, as the pattern of signals influencing described in Figure 2 and [0084-0086].

Id. at p. 18-19. Applicants respectfully disagree.

Initially, Applicants note that the Action has misinterpreted Figure 2 of Hayashi, reproduced below.

FIG. 2



On page 5, the Action states that Figure 2 "is an interpretation of the pattern of symbols." Applicants respectfully disagree. Figure 2 of Hayashi illustrates the positions of symbols for each of a plurality of carries included in an OFDM signal. Each symbol transmits either a data or pilot signal. Therefore, the symbols shown in Figure 2 are not just for pilot signals. Notably, Hayashi does not disclose or suggest accessing at least one of the symbols in Figure 2 to establish a "distinguishable power based pattern for the pilot" signals.

Further, Hayashi merely discloses that a pilot signal is transmitted every four symbols, but does not disclose or suggest establishing a distinguishable power based pattern for pilot carriers, as claimed. In the cited paragraphs and the response to arguments section, the Action refers to the differential power calculator 237 of Hayashi which generates a difference between channel responses for pilot signals for generating fading information. As described in further detail below, Hayashi uses the fading information to identify errors, but does not disclose or suggest using the fading information to establish a distinguishable power based pattern for pilot signals. Hayashi describes pilot signals in paragraph 0009, which reads:

FIG. 2 is a view illustrating a specific example of arrangement of symbols for transmitting pilot signals in an OFDM signal. As shown in FIG. 2, pilot signals P1 are transmitted every four symbols, so that channel responses for the pilot signals P1 are obtained every four symbols. This indicates that channel responses for three data signals 01 between the adjacent pilot signals must be determined from the channel responses for the pilot signals P1.

Hayashi describes the differential power calculator 237 in paragraph 0206, which reads:

. . . the differential power calculator 237 determines a difference between channel responses for pilot signals output from the channel response calculation section 22 and the memory 231, squares the resultant difference value to obtain a differential power, and outputs the results to the inter-symbol filter 238. At this time, the controller 232 controls the memory 231 to output a channel response for a pilot signal immediately preceding a pilot signal corresponding to the channel response output from the channel response calculation section 22. The differential power output from the differential power calculator 237 corresponds to a change amount in the channel responses for pilot signals in one cycle (N symbols).

Hayashi describes averaging change amount in paragraph 0208, which reads:

The average calculator 239 averages the change amounts in channel responses obtained for the respective pilot signal-inserted carriers, and output the calculated average value to the operator 234 as fading information. The fading information refers to an average change amount in channel responses for all the pilot signals, indicating the degree of fading interference. When heavy fading interference occurs, the channel responses change greatly, and as a result, the fading information gives a comparatively large value.

Thus, the differential power calculator 237 of Hayashi generates a difference between channel responses for pilot signals for generating fading information.

Hayashi does not disclose or suggest using the fading information to establish a distinguishable power based pattern for pilot signals. Instead, Hayashi discloses that the fading information is used to determine that a “linear-extrapolated channel response may include many errors.” See Hayashi at ¶0211. Hayashi therefore is using the fading information to identify errors, but does not disclose establishing “a distinguishable power based pattern for pilot carriers” as recited in claim 1. As such, the combination of Keevill and Hayashi, even if proper, fails to teach or suggest all of the elements recited in claim 1 and hence the rejection under 35 U.S.C. § 103 (a) is improper. Applicants submit that claim 1 is in condition for allowance.

Independent claims 29-32 are allowable at least for reasons analogous to those given in support of claim 1. The pending claims that respectively depend on independent claims 1 and

29-32 are allowable at least due to their dependence on an allowable claim, in addition to the features they recite.

CONCLUSION

Applicants respectfully submit that the pending claims are in condition for allowance. Favorable reconsideration of this application is respectfully requested. The Examiner is invited to contact the undersigned should it be deemed necessary to facilitate prosecution of the application.

Respectfully submitted,
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